physical examinations. Under-diagnosis for PAD in practice was common and it might have under-estimated PAD prevalence.
CONCLUSIONS: Previously reported PAD prevalence varies depending on clinical presentations, different screening tools, and the distribution of risks for PAD. Understanding of and effectively adjusting for these factors may be helpful to appropriately interpret and utilize the study results for future research.

PMI6

ESTIMATING THE BENEFITS OF ANTIHYPERTENSIVE THERAPY: AN ASSESSMENT OF PULSE PRESSURE

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OBJECTIVES: Recent analyses suggest that pulse pressure is an important and independent risk factor for cardiovascular disease. Accordingly, pulse pressure may also be an important variable for inclusion in economic analyses of hypertension therapy. We therefore analyzed the relationship between pulse pressure and cardiovascular events after adjustment for other risk factors to determine if pulse pressure is an explanatory variable in the treatment of hypertension. We then evaluated the importance of pulse pressure as an explanatory variable in the treatment of hypertension.
METHODS: Using multivariate analyses and data from the Lipid Research Clinic Cohort, we examined the association between specific blood pressure measures and cardiovascular death after adjustment for age and other risk factors. We then compared the goodness of fit (GOF = [observed events–expected events]^2) of various Markov models to forecast the results of randomized clinical trials of hypertension therapy using single blood measures or combinations of measures.
RESULTS: Pulse pressure is a strong univariate risk factor for coronary and cardiovascular death. Both pulse pressure and diastolic blood pressure were independent ($p < 0.05$) risk factors with a significant negative interaction between increasing age and diastolic blood pressure and a positive but non-significant pulse pressure x age interaction. In Markov model simulations, the model including diastolic and pulse pressure better approximated (GOF = 91) the observed outcomes in five clinical trials compared to either systolic, diastolic or pulse pressure alone (GOF = 208, 375, 706 respectively).
CONCLUSION: Pulse pressure is a significant independent risk factor for cardiovascular events that increases in relative importance with increasing age. When pulse pressure is added to a Markov model with diastolic blood pressure the results of clinical trials are more accurately forecasted. Economic analyses of hypertension therapy may be enhanced by considering blood pressure changes other than only systolic or diastolic in isolation.

PMI7

MODELING ON THE STOCHASTIC FRONTIER: COST OF TREATMENT FOR ACUTE DECOMPENSATED HEART FAILURE

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OBJECTIVES: Cost of treatment for patients with the same diagnosis can vary enormously due to differences in comorbidities, practice patterns, and outcomes of care. We sought to incorporate this variability in a model projecting the results of clinical trials to community practice.
METHODS: We modeled an episode of care for persons hospitalized due to acute decompensated heart failure and urgently treated with either nesiritide or dobutamine. Patient characteristics and probability of significant clinical events (cardiac arrest, sustained and non-sustained ventricular tachycardia, hypotension, vomiting, readmission and death during follow-up) were based on pooled analysis of two completed clinical trials. The cost of a hospital admission was derived from a subset of records from the 1997 HCUP hospital database for discharges with similar demographic and clinical features (n = 57,223). Regressions were estimated for equations explaining 1) hospital length of stay as a function of patient attributes and specified clinical events; 2) the cost of the admission as a function of patient attributes, clinical events and predicted length of stay (LOS). For each of 5000 simulated patients, the model first stochastically generates new sets of regression parameters using the means and standard deviations of the original parameter estimates. Next the model predicts patient demographic characteristics and incidence of clinical events. The vector of patient attributes is applied to the vectors of regression parameters to predict LOS and then cost as a function of predicted LOS.
RESULTS: This approach preserved distributional characteristics of the original HCUP data (e.g. model predicted cost of admission vs. HCUP: mean 14,807 vs. 14,666; skew 2.94 vs. 3.16; kurtosis 10.03 vs. 11.43) while enabling us to differentiate study drugs based on incidence of clinical events.
CONCLUSIONS: The model yields robust estimates of cost. Confidence intervals surrounding point estimates offer decision-makers a reliable basis for assessing potential financial impact and uncertainty surrounding adoption of the treatment intervention.

PMI8

VALIDATION OF COST ESTIMATION TECHNIQUE FOR HOSPITALIZATIONS FOR USE IN MULTINATIONAL ECONOMIC EVALUATIONS

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OBJECTIVES: Economic evaluation requires reliable estimation techniques for hospital costing in multinational trials. We have developed methods to assign costs to all hospitalizations by multiplying country-specific cost estimates for a "base" diagnosis by a relative DRG weight (U.S. DRG weight for the diagnosis in question/DRG weight for the "base" diagnosis). Our objective was to assess the validity of calculating country-specific cost estimates computed with U.S.-based DRG weights.
METHODS: Unit costs collected alongside Val-HeFT, a multinational trial in heart failure, were used to compare cost estimates provided by local economists with estimates computed using U.S.-based DRG weights. Unit cost estimates for 8 diagnoses from 14 countries were evaluated. We calculated the correlation between the cost estimates and performed regression analysis to examine the relationship between them.
RESULTS: When hospitalization for heart failure was used as the "base" diagnosis, DRG-based cost estimates were within 35% of the survey estimates for 86% of the countries for unstable angina, 82% for acute MI, stroke, and colon cancer. Costs were less well predicted for pulmonary embolism, coronary stenting, PTCA, and heart transplant, where only 61.5%, 54.5%, 33.3% and 30.0% of predicted costs were within 35% of survey estimates. The DRG-based estimates appeared to overestimate costs for procedure-based diagnoses as the costs were overestimated by 40.3% for stenting, 34.9% for PTCA, and 77.8% for heart transplant. The Pearson correlation coefficient between the two sets of estimates was 0.682. When excluding heart failure, the regression of DRG-derived costs on survey-derived costs indicated that the DRG-based methodology predicted cost estimates fairly well (adj-R2 = 0.44) (adj-R2 = 0.571 when adjusting for country).
CONCLUSIONS: Estimation of hospital costs based on U.S. DRG weights appears to be a reasonable solution to costing problems in the multinational trial setting. However, care is required in applying this technique in studies with high frequencies of surgical procedures.

PMI9

THE RELATIONSHIP BETWEEN DISEASE AREA AND TYPE OF ECONOMIC STUDY—DOES IT EXIST?

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Pharmacoeconomic analysis aims to identify and measure all costs and all outcomes associated with providing a pharmaceutical product or service. In order to accomplish this several economic study techniques have been used in the pharmacoeconomic literature in various disease areas.
OBJECTIVES: To determine if there is a relationship between the type of study (e.g. cost-effectiveness (CEA), cost-benefit (CBA), cost-minimisation (CMA), cost-utility analysis (CUA)) used in a pharmacoeconomic analysis and the disease area being investigated.
METHODS: Five disease areas, as categorised by the British National Formulary 1 were investigated. A broad literature search, using MESH terms, was performed using Medline (PubMed) and abstracts that included full and partial pharmacoeconomic analyses, from 1966 until the present day, were considered for review.
RESULTS: 119 abstracts were. No cost-benefit analyses were found and the most commonly used full economic techniques were cost-effectiveness and cost-utility analysis; whilst cost analysis was the most commonly used partial analytic technique. CEA was the preponderant technique employed in the cardiovascular, respiratory and central nervous system disease areas, with contributions of 50% (24/48), 43.48% (10/28) and 45.45% (5/11) respectively. CUA was preponderant in the endocrinal disease area, 30.77% (4/13), whilst CEA and CUA were equally employed in the area of gastrointestinal disease, 33.33% (8/24) and 25.00% (6/24) respectively. Cost-analysis did not dominate any disease area, and was not found to be preponderant in any specific disease area.
CONCLUSION: Although this initial review found that CEA was the preponderant technique employed in the cardiovascular, respiratory and central nervous system disease areas and CUA in the endocrinal disease area, the relatively small number of papers reviewed cannot allow one to draw conclusions regarding definite relationships between disease areas and the type of studies used. Further analysis of the pharmacoeconomic literature is required to investigate possible relationships further and highlight these where they occur.

PMI10

DANCING WITH THE DEVIL: THE IMPORTANCE OF SUB-GROUP ANALYSIS IN ECONOMIC EVALUATION

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OBJECTIVES: To explore the use of sub-group analysis in economic evaluation and to compare the relevance of such analyses to the standard recommendations for approaching sub-group analysis in clinical studies.
METHODS: The standard pitfalls associated with ad hoc sub group analyses in clinical evaluation are well known, and such analyses are generally discouraged. However, in economics, small differences in effect between sub-groups can lead to important differences in cost-effectiveness for those groups. This suggests that sub-group analysis is of critical importance for economic evaluation and the policy decision that such evaluations seek to inform. However, we must remain mindful of the potential pitfalls in terms of inappropriate inference, especially when